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EXAMINER	
BEHREND, HARVEY E	

ART UNIT	PAPER NUMBER
3641	

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/887693

Applicant(s)

Waisman et al

Examiner

Be hrend

Group Art Unit

3641

Mull

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

## Status

- ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 5, 19, 28 is/are pending in the application.
- ☐ Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 5, 19, 28 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
  - ☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.
  - ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.
  - ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_.

## Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other \_\_\_\_\_

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1. Applicants election without traverse in the 5/21/03 response of Group I and species A (wherein the host metal is made in the form of a tube by a bulk technique (as set forth in the specification on page 12 lines 15-23)), X (the embodiment as set forth in Fig. 1) and, Pd as the host metal, is acknowledged.

The presently pending claims of 5, 19 and 28 are considered readable on each of the elected species.

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. The specification is objected to under 35 U.S.C. § 112, first paragraph, as failing to provide an adequate written description of the invention and as failing to adequately teach how to make and/or use the invention i.e. failing to provide an enabling disclosure.

There is no reputable evidence of record to support any allegations or claims that the invention involves nuclear fusion nor, that any allegations or claims of "excess heat" are valid and reproducible, nor that the invention as disclosed is capable of operating as indicated and capable of providing a useful output.

The invention (see for example pages 1+ of the specification) is considered as being based on the "cold fusion" concept set forth by Fleischmann and Pons (hereinafter, F and P)(see the 3/24/89 article by D. Braaten). This concept relies on the

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incorporation of deuterium into a metal lattice. While F and P relied on electrolysis of heavy water to incorporate of deuterium into the metal lattice, it was also known that as a variation, the deuterium could be incorporated into the metal lattice by bringing the metal into contact with deuterium gas.

Thus it is clear that applicants invention is just a variation of the cold fusion concept set forth by F and P.

However, as set forth more fully below, this "cold fusion" concept is still no more than just an unproven concept.

Subsequent to the announcement of the cold fusion concept by F and P, many laboratories have attempted to confirm the results of F and P.

The results of these attempts at confirmation were primarily negative and even of the few initial positive results, these were generally either retracted or shown to be in error by subsequent experimenters (see for example, the article by Stipp in the Wall Street Journal and the article by Browne in The New York Times (particularly page A22)).

The general consensus by those skilled in the art and working at these various laboratories is that the assertions by F and P were based on experimental errors (e.g. see The New York Times article by Browne, Kreysa et al, Lewis et al, Hilts, Ohashi et al, Miskelly et al, and Chapline).

It was also the general consensus by those skilled in the art and working at these various laboratories that there is no reputable evidence to support the allegation or claim of excess heat production, nor, is there any reputable evidence of neutron,

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gamma ray, tritium, helium production, etc., to support the allegations or claims that nuclear reactions are taking place. See for example (in addition to the above listed references), Cooke, Alber et al, Faller et al, Cribier et al, Hajdas et al, Shani et al, Ziegler et al, Price et al, Schrieder et al and page A3 of the 3/29/90 edition of The Washington post (which refers to the negative findings of a physicist who had tested Pon's own cold fusion apparatus, for nuclear output (for a more complete analysis of said "negative findings", note the article by Salamon et al)). Also of interest in this respect in the Cooke reference which on pages 4 and 5 refers to the attempts at Harwell to obtain "cold fusion" and that Fleischmann (of F and P) had requested help from Harwell in verifying the cold fusion claims. Said page 5 also indicates that data was collected in Frascati-type (i.e. gaseous) experiments.

The last paragraph on said page 5 states:

"After three months of around-the-clock work at a cost of over a half a million dollars, the project was terminated on June 15. This program is believed to be one of the most comprehensive worldwide with as many as 30 cells operating at a time and over 100 different experiments performed. The final result of this monumental effort in the words of the official press release was, "In none of these experiments was there any evidence of fusion taking place under electrochemical conditions. It should also be added that there was no evidence of excess heat generated by any of their cells". (Underlining added).

Note that a disclosure in an application, to be complete, must contain such description and detail as to enable any person skilled in the art or science to which the invention pertains to make and use the invention as of its filing date, In re Glass, 181 USPQ 31.

It is not clear from the disclosure that when a hydrogen absorbing metal is placed in a container and exposed to deuterium gas at elevated pressures so as to have

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deuterium dissolved therein, that by controlling the temperature and deuterium gas pressure within the container, one can operatively produce elevated system free energy states corresponding to deuterium gas chemical potentials from (presumably zero) up to 60 kJ/mol and, that one can operatively cause the deuterium nuclei to undergo nuclear fusion reactions.

No specific parameters are given and no specific example is provided.

Specific operative embodiments or examples of the invention must be set forth. Examples and description should be of sufficient scope as to justify the scope of the claims. See MPEP 608.01(p).

For example, the disclosure is insufficient and non-enabling in failing to indicate the requisite parameters of an operative embodiment of the invention, including porosity and exact composition (including impurities and amounts thereof) of the host metal and of the filler material; the exact composition (including impurities and amounts thereof) of the gaseous atmosphere in the container; the requisite pre-conditioning of the host metal matrix which absorbs or is to contain the deuterium therewithin; the requisite minimum concentration of deuterium in the host metal matrix and the minimum temperature necessary for the nuclear fusion to take place.

It is noted in this respect that even the specification on page 3 lines 26+ states that specific combinations are required to enable one to obtain the claimed nuclear fusion reactions and, the specification is hence insufficient and non-enabling in failing to recite said "specific combinations".

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It is noted in this respect that even the specification on page 9 lines 15+ indicates that the degree of purity, morphology of the host metal, crystal size and regularity, the population of flaws, cracks, vacancies, distortions and dislocations in the crystal lattice structure of the host metal, etc., are critical parameters which can determine whether or not the desired nuclear reaction actually takes place so as to present an operative invention (thus the specification is insufficient and non-enabling in failing to disclose these parameters).

The disclosure is also insufficient as to what point (e.g. the size and extent of the population of cracks, the requisite degree of purity (and as to what impurities would be permissible), etc.), any of these various factors (or combinations thereof) would prevent operability.

Note that there are cold fusion experimenters (especially those who believe in cold fusion) who consider that it is the specific impurities and the level of these impurities, that cause some Pd cathodes to produce nuclear fusion while other Pd cathodes (even some from the same supplier and batch) do not cause nuclear fusion to take place.

Note for example, Murray (I) on page 1 quoting Edmund Storms that

"...only certain samples out of the same batch of catalyst work. Presumably if the He concentration were uniform, all samples would show He production. On the other hand, failure to initiate a nuclear reaction could result form failure to remove all impurities from the surface in the failed runs. This purification process is known to be important and tricky."

See also the following statement by M. Miles on page 100 of the 7/13/98 issue of

C & EN:

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"The cold fusion controversy will continue until an experiment is so clearly defined that it can be readily reproduced in any laboratory. My results, along with the reports from many other laboratories, suggest that there are hidden variables within the palladium metal that are not yet under experimental control. These variable include the grain size and impurity levels..." (Underlining added).

For further documents illustrating this problem of finding an appropriate or suitable Pd material, note Murray (III) and Carr.

There is also no adequate description nor enabling disclosure of how and in what manner, this "minimum" concentration of deuterium in the metallic catalyst is initially obtained and, then maintained, so as to present an operative device.

The specification on page 18 lines 28+ states that as the deuterium is depleted (due to undergoing nuclear fusion) the power production rate for a given temperature will decrease and, to compensate, the reactor is operated at gradually higher temperatures over the life of the reactor (the disclosure, however, is insufficient as to how and in what manner such is accomplished).

Said page 12 of the specification (as well as page 8 lines 6 and 7) states that there is no minimum deuterium concentration in the metal below which nuclear fusion will not occur (the specification is insufficient as to the basis for such).

The disclosure is insufficient as to the minimum size of vessel 2, the thickness and quantity of host metal, the concentration of deuterium in the host metal, the temperature and the deuterium gas pressure in the vessel 2, etc., necessary to present an operative embodiment of applicants invention.

The disclosure is insufficient as to how and in what manner, the mere presence of a filler material causes an amplification of said deuterium gas pressure increase



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when said reactor temperature is increased (e.g. see the specification on page 4 lines 20+).

Applicants invention basically involves placing a hydrogen absorbing metal in a container, causing deuterium to be absorbed into said hydrogen absorbing material, which in turn, results in the deuterium undergoing nuclear fusion reactions.

However, the concept of storing deuterium in a vessel containing a hydrogen absorbing material (including under high pressure and where heat is applied) has been notoriously well known for many years. As examples thereof, resort may be had to Baranowski, Tanaka et al, Klatt et al (I), McMullen et al, Carstens et al, and, Schirber et al.

However, the systems as disclosed in these examples were not considered as being reactors wherein nuclear fusion took place.

Indeed, if nuclear fusion did take place in said six examples, thus causing the hydrogen isotopes to be depleted due to burn-up, the systems in said six examples would have been rendered inoperative for their intended and disclosed purposes.

Additionally, artisans such as Price et al actually attempted to obtain nuclear fusion by subjecting deuterated Ti and Pd to temperature and/or pressure cycling (e.g. note the first column on page 1926 of Price et al), all with negative results. In this same regard, see also, Balke et al, Friedmann et al, McCracken et al, and Aiello et al.

In contradistinction, applicant alleges that in systems of this type, the deuterium instead, undergoes nuclear fusion reactions and thus said systems can be utilized for power generation due to the heat generated from the nuclear fusion reactions.

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Assuming for the sake of argument that applicants invention does actually function in a different manner to produce a different result from that of any of Baranowski, Tanaka et al, Klatt et al(I), Schirber et al, Carstens et al, or McMullen et al, it can only be because applicants invention actually contains some non-disclosed additional critical feature(s), component(s), etc., not found in any of said references which is necessary to enable applicants invention to function differently from any of said references so as to be able to produce a different result.

Applicants disclosure is thus insufficient and non-enabling in failing to disclose and identify, said "additional critical but non-disclosed features, parameters, etc., which enables applicants invention to be operative to produce nuclear fusion and, which is presumably lacking in such system as that of said references.

It is noted in this same regard that applicants present claims do not recite any critical features, etc. Basically, claim 28 recites a host metal in a reactor vessel, which is subjected to deuterium gas at an (unspecified) elevated pressure, with a means to control the reactor vessel's temperature and deuterium gas pressure (however, there is no adequate description nor enabling disclosure of how and in what manner, a solid state deuterium fusion reactor as broadly recited in said claim 28, can be operative to produce deuterium fusion reactions at any temperature, pressure, etc).

Applicants specification contains assumptions and speculation as to how and in what manner, his invention will operate (see for example page 3 lines 4-9 and 30+, page 8 lines 8-23, page 4 line 26). However, applicant has presented no reputable factual evidence to support his assumption and speculation that when Pd metal has

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deuterium absorbed or adsorbed therein, the deuterium nuclei can be caused to undergo nuclear fusion to produce heat. The disclosed utility is a power producing system responsive to load demands (e.g. see page 3 lines 14-16 and page 18 of the specification). However, there is no reputable description nor enabling disclosure of an operative nuclear fusion system or process which could actually produce such useful amounts of energy.

It appears from the specification (see as one example thereof, pages 10+) that applicant simply assumes the invention will operate as disclosed.

However, unsubstantiated and unsupported assumptions or conclusions do not satisfy the requirements of the statute, 35 USC112 first paragraph.

Further, any such conclusions, etc., must inherently be based on various, equations, formulas, approximations, estimations and/or assumptions that the artisan utilizes to describe or attempt to define, a physical system.

Applicants disclosure is thus insufficient and non-enabling in failing to set forth said various equations, formulas, approximations, estimations and/or assumptions (as well as an appraisal of their degree of validity) that were utilized in arriving at the conclusion or assumption that the invention will actually operate as disclosed and claimed.

As to applicants unsupported assumption or conclusion that the F and P concept of "cold fusion" is real and valid (e.g. see page 2 of the specification) (and that as a consequence, applicants cold fusion nuclear transformation concept is real and valid),

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note the documents referenced above showing that the scientific community in general, does not consider this cold fusion concept as being real, valid or operative.

These documents show how easily, experimental data, experimental errors, etc., can be misinterpreted as providing evidence of the operability of such cold fusion systems.

Note further in this respect that there has essentially been a continuing stream of publications from 1989 on showing that virtually none of the scientific community consider the alleged positive results of these "cold fusion" experiments, as being confirmed. In this respect, attention is directed to Merriman et al, Ewing et al, Albagli et al, Bosch et al, Fleming et al, Balke et al, Henderson et al, Nova, Huizenga (I), Huizenga (II), Huizenga (III), Huizenga (IV), and Rogers et al.

These references provide further clear evidence that no excess heat is generated in such "cold fusion" systems nor is there any evidence of nuclear reactions or transformations taking place.

As to some of the Japanese claims of positive cold fusion results, note the comments by David Williams in the Hadfield article on page 10 of the 10/31/92 issue of New Scientist. David Williams (head of the department of chemistry at University College London) described the claims as "absolutely pie-in-the-sky".

Note also the negative comments in Huizenga (I) as to some of the Japanese work in cold fusion (e.g. see pages 240, 246, 251, 252, 277-281).

Williams et al, Broad and NOVA refer to some of the spurious effects, faulty data, etc., which have led to some of the claims of the existence of cold fusion.

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The Dagnai article in the 1/14/91 issue of C & EN states that the "cold fusion" claims are taken seriously by virtually none of the scientific community and that research at Utah's National Cold Fusion Institute (NCFI) as well as research elsewhere, have failed to establish the existence of cold fusion.

Another article by Dagnai (in the 6/14/93 issue of C & EN) entitled "Latest Cold Fusion Results Fail to Win over Skeptics", states that "the vast majority of scientists...dismissed the evidence of nuclear fusion results inside a metal lattice as nonsense-a case study in pathological science".

Note particularly the excerpts from the book "Too Hot To Handle" by Frank Close. This book refers to various errors in the work of F and P (e.g. see pages 161+), as well as by other experimenters (note particularly the comments on excess heat in calorimetry on pages 351-353).

In this same vein, note the analysis of calorimetry with electrolytic cells of the F and P type, set forth in Wilson et al, as well as the comments concerning possible errors in heat measurement by Jones (on pages 284, 285 of Surface and Coatings Technology) and, by Albagli et al.

Hilts states that the MIT experiments failed to produce any of the excess heat reported by the Utah group.

Lewis et al state in the summary on page 525 that they found no evidence of excess enthalpy in their experiments and, they refer to various possible sources of error which could lead to the erroneous conclusion that excess heat was produced (note pages 528-530).

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Both Hilts and Lewis et al indicate that in any determination of excess heat, one must determine the total amount of energy produced (as heat and chemical energy) integrated over the whole period of cell operation, versus the total energy input.

Another documents showing how experimental data, etc., can be misinterpreted as providing evidence of the operability of cold fusion systems, is the transcript of the television show on NOVA entitled, "Confusion in a Jar", which indicated that in these cold fusion experiments, it is fairly easy to get quick results which could be "interpreted" as providing evidence of "cold fusion" but that in very carefully run experiments which were rechecked, etc., such as by using several different methods and/or detectors to attempt to detect the same presumed experimental results, the end result was negative.

The article by Taubes on pages 1299-1304 of the 6/15/90 issue of Science, explains why the alleged detection of tritium at Texas A & M cannot be relied on as evidence of "cold fusion" actually taking place.

Note that evidence shows that even having a high concentration of deuterium in the cathode will not result in nuclear fusion taking place.

In this respect, Silvera et al found no evidence of "cold fusion" with a D/Pd ratio as high as 1.34 and, Myers et al obtained negative results even with a D/Pd ratio as high as 1.6.

Dagani in the June 5, 1995 issue of C & EN refers to experimental errors which negate the positive results of some cold fusion experimenters.

In a 1992 article in Surface and Coatings Technology, Jones takes the position that the claims of excess heat, tritium and helium production due to nuclear reactions

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are “dubious to say the least” (note page 288) because there is no evidence of commensurate nuclear products. Note the reference to  $E=mc^2$  on page 286.

Taubes, “Bad Science: The Short Life and Weird Times of Cold Fusion”, 1993, is a good reference for showing the view point of the scientific majority towards cold fusion. After interviewing 250 people in the field, Taubes concluded that “Cold Fusion... does not exist”, and “As long as financial support could be found, the research would continue... In fact, the few researchers still working in the field would have little incentive to acknowledge negative results as valid, because such recognition would only cut off their funds”. Note page 426.

Another good reference presenting a compilation and analysis of cold fusion work subsequent to the 1989 announcement of the cold fusion claims of F and P, is the book, “Cold Fusion: The Scientific Fiasco of the Century”, by Huizenga (I). Huizenga was co-chairman of the DOE/ERAB panel on cold fusion. Note particularly the “Epilogue” on pages 237-287 which discusses some of the alleged positive results presented at the First, Second and Third Conferences on Cold Fusion.

On page 201+ (and more particularly, page 214) Huizenga (I) indicates cold fusion can qualify or be characterized as “pathological science”, defined as “the science of things that aren’t so” (see also Huizenga (II), Huizenga (IV), Morrison (II), and Rousseau in this respect).

On page 26, Huizenga (I) states that some of the similarities between cold fusion and other unsubstantiated concepts, are

- (1) lack of control experiments,

- (2) statistical uncertainties,
- (3) irreproducibility and
- (4) the public description as a "simple experiment".

Note particularly pages 125, 222, 223, of Huizenga (I) which refer to the lack of reproducibility of the alleged "positive" cold fusion results.

Clearly if something cannot reproduced at will, there is also, then, no enabling disclosure which would enable one of ordinary skill in the art, to make and use it, as required by statute (35 USC 112).

Morrison (I) in Trans. Of Fusion Technology, sets forth various criteria to be followed in doing cold fusion experiments and of problems that can arise.

Jones et al (II) and Jones et al (I) debunk the positive cold fusion claims of Miles et al at the Naval Research Lab. in China Lake, showing how experimental errors, etc., can give a false impression of positive results.

Jones et al (III) and Shkedi et al show how faradaic efficiencies of less than 100% during electrolysis of water can account for reports of excess heat in "cold fusion" cells.

It is noted that even the specification on pages 1-3 indicates that the alleged positive results of cold nuclear fusion or cold nuclear transformations, are extremely difficult to reproduce or duplicate!

As to this issue of reproducibility, note the following comments by Huizenga (IV) under the heading Reproducibility:

"The foundation of science requires experimental results to be reproducible. Validation is an integral part of the scientific process. Scientists



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are obligated to write articles in ways that allow observations to be replicated. Instructions should be available to permit a competent and well-equipped scientist to perform the experiment and obtain essentially the same results. Replication in science usually is reserved for experiments of special importance or experiments that conflict with an accepted body of work. The greater the implication of an experimental result, the more quickly it will be checked by other scientists.

As more and more groups at major universities and national laboratories were unable to replicate either the claimed excess heat or fusion products, proponents of cold fusion quickly pointed out that the experiment was not done properly: one needed different size palladium cathodes, longer electrolysis times, and higher currents, they claimed.

Whenever the inability of qualified scientists to repeat an experiment is met by ad hoc excuses, beware. One important role of a scientific article is to provide directions for others. Scientists establish priorities for their discoveries by publishing a clear and well documented recipe of their experimental procedures. If a scientific article fails to include an adequate recipe, which allows a skilled reader to reproduce the experiment, it is a warning that the author's understanding of their work is incomplete.

Cold-fusion proponents introduced new dimensions into the subject of reproducibility in science. Some tried to turn the tables on reproducibility by giving irreproducibility a degree of respectability. A second aberration was to assign a different value to experiments attempting replication. Only experiments that obtain some fragmentary evidence for cold fusion were to be taken seriously because it was declared that experiments obtaining negative results required no special skills or expertise. This viewpoint led proponents of cold fusion to invite mainly papers reporting positive results when organizing conferences. Such an aberrant procedure is incompatible with the scientific process and usually is viewed negatively by scientists as well as journalists." (Underlining added).

Note that "reproducibility" must go beyond one's own lab. One must produce a set of instructions, a recipe, that would enable anyone in their own independent lab (including the labs of cold fusion skeptics) to produces the same results. If reproducibility only occurs in one's own lab, errors (such as systematic errors) would be suspect. See for example, Little et al.

As a further issue in regard to reproducibility, experimenters who previously found evidence of excess heat, found no evidence of excess heat when better

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calorimetric equipment was used (see section 2.2 on page 2 of Morrison (IV) (note that such refers to the work at IMRA (Japan))).

It is considered elementary that identical structures operated in identical manners, must produce identical results. Such is even relied on in one's everyday life.

If instrumentation, etc., indicates that identical structures operated in identical manners do not produce identical results, clearly, one of two things is implied.

1) The presumed identical structures actually are not identical, i.e. one of said structures actually has something additional, some critical feature not found in the other said structures, which causes said one of said structures to produce the positive results.

2) The structure actually are identical, however, instrumentation, etc. is producing spurious results leading to the erroneous conclusion that one or even some or all or said identical structures, are producing positive results.

Note again the comments in section 2.2 on page 2 of Morrison (IV) concerning experimenters who had previously found what was considered as being evidence of excess heat but, who subsequently found no evidence of excess heat when they used better calorimetric equipment.

If however, it is actually something additional, some critical feature, which causes some of these cold fusion or cold nuclear transformation systems to produce actual, positive results whereas otherwise identical systems do not, then clearly, this "something additional", this critical feature, must be clearly specified so as to enable the artisan to make and use the invention as required by statute.

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Reproducibility of the alleged positive cold fusion results is clearly a critical feature in determining if a disclosure adequately teaches the artisan how to make and use an invention for its disclosed purpose.

Accordingly, the logical conclusion when one does not get identical results and/or the results are not reproducible at will in these cold fusion experiments, is that the alleged positive results are not real but instead, they are due to experimental errors, instrumentation errors, misinterpretation of results, etc.

Clearly, when an artisan or experimenter is relying on the experimental results of a particular experiment(s) to establish certain facts, it is incumbent upon the experimenter to show that the alleged experimental results are valid and not just the result of experimental error (and that the alleged experimental results do not fall within the limits of experimental errors).

This is especially so when the experiments in question are (as here) in a field wherein the scientific community in general considers the alleged positive experimental results to be erroneous.

For a discussion of errors arising in cold fusion tests or experiments, note for example, the book, "Too Hot To Handle", by Frank Close, Page 259-263 of this book set forth various errors that can occur, leading to the erroneous conclusion that excess power was produced in the cold fusion experiments. Page 261 of this book contains the telling statement:

"In addition to these experimental problems there were several examples where the numeral evaluation of the data and assessment of error were incorrectly or badly done or, in some cases, not done at all...

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The DOE panel commented that there had been a noticeable lack of attention to the statistical assessment of errors, and that in some cases, where heat as being claimed, a group's claim of excess heat is not supported with results of sufficient precision to allow such a conclusion. More usually it is not possible to assess precision from reported results because the result is reported from a single run and no error bars are provided for the measured parameters....

The DOE panel noted: 'Conclusions in this area simply cannot be accepted without a through assessment of the measurement errors. In its visits and conversations the members of the panel were struck repeatedly by the absence of critical assessments of this kind.'" (Underling added).

In this respect, Morrison (III), Jones et al (I), Murray (II), Jones et al (II), Jones et al (III), Green et al, Shelton et al, and Merriman et al, discuss some of the possible sources of errors in the calorimetry that can lead to erroneous conclusion that excess heat was present.

As to further documents illustrating errors that can occur and/or have not been accounted for in cold fusion experiments, see J.E. Jones, Giglio, Shanahan (II), Shanahan (III), Schultz (I), Schultz (II), Blue, Carr, Hoffman, Shkedi et al, Shelton et al, Jones et al (III).

It is the examiners' position that an undue amount of experimentation would be required to produce an operative embodiment of applicants invention. The examiner has cited numerous documents showing that experimenters having obtained negative results using various types of cold fusion apparatus, all based on the cold fusion concepts set forth by F and P.

This issue of undue experimentation has been succinctly addressed by Douglass Morrison at the Fourth International Conference on Cold Fusion Technology, (ICCF-4) held Dec. 6-9, 1993 in Hawaii (reproduced in Transactions of Fusion Technology vol. 26, Dec. 1994), see page 54 which states:

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IX. When A COLD FUSION WORKING DEVICE?

8 December 1993; the previous speaker, Dr. H. Fox, giving he said, a businessman's point of view, declared he expected a working Cold Fusion device in 20 years.

November 1993. Dr. S. Pons said that by the year 2000 there should be a household power plant -6 years.

1992. Dr. M. Fleischmann said a 10 to 20 Kilowatt power plant should be operational in one year.

July 1989, The Desert News published an article by JoAnn Jacobsen-Wells who interviewed Dr. S. Pons. There is a photograph in color, of Dr. Pons beside a simple apparatus with two tubes, one for cold water in and one for hot water out. This working unit based on Cold Fusion was described as "It couldn't take care of the family's electrical needs, but it certainly could provide them with hot water year-round" said Pons.

Later in the article it was written "Simply put, in its current state, it could provide boiling water for a cup of tea."

Time delay to this working model – Zero years.

Thus it appears that as time passes, the delay to realization of a working model increases.

X. CONCLUSION

No conclusion are presented – everyone can judge for themselves. However some questions can be asked;

Are Cold Fusion results consistent in claiming Cold Fusion effects in Deuterium but not in normal Hydrogen, while other groups claim Cold Fusion effects with hydrogen?

Is the ratio of tritium to neutron production about unity as Fleischmann and Pons originally claimed [5] or is the ratio in the wide range  $10^4 - 10^9$  as most other workers claim?

Are transmutation, Black Holes, Biology [18] part of the normal world of Cold Fusion?

To explain the null experiments there is one theory – the conventional theory of Quantum Mechanics, but that are a wide variety of theories to explain positive Cold Fusion results – can they all be valid simultaneously – if not, which should be rejected?" (Underlining added).

Murray (IV) (particularly pages 5 and 6) show how ICP-MS data can be misinterpreted as providing evidence of nuclear transmutation or transformation. Note also in this respect, the negative comments concerning nuclear transmutations in cold fusion cells, on pages 7 and 8 of Morrison (IV).

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Note the statements (reproduced below) concerning nuclear transmutation on page 1 of Segment 2 of Bass.

"Scott's second epistle recapitulates what we learned from realms of data from Miley's and the Cincinnati Group's transmutation data. No reasonable evidence for transmutation exists once allowance is made for the innumerable ways complicated and subtle instrumentation can be wrong. You see, we can't even determine with those remarkable systems something as simple as 10 ppm Zn in pure  $\text{Li}_2\text{SO}_4$ . Prejudiced and desperate attempts to quickly survey complex unknown samples results in "data stew". (Underlining added).

Note also that page 2 of Segment I of Bass indicates that errors can easily occur in ICP/MS when working on unknown and/or unusual samples. Said page 2 states that different labs using samples split from the same reagent grade  $\text{Li}_2\text{SO}_4$  came up with differing amounts of Zn as being present in  $\text{Li}_2\text{SO}_4$ . See the fifth paragraph on page 2 which states:

"The Aldrich lot analysis showed 4 ppm Zn. The old lab got 9 ppm Zn. The new lab got 51 ppm Zn. I told the new lab what the other two results were and asked them to repeat their analysis, they managed to come up with 31 ppm Zn the second time".

Morrison (V) provided a good report on the 5<sup>th</sup> Cold Fusion Conference and Morrison (IV) (discussed above) provides a good report on the Sixth Cold Fusion Conference.

Note also the negative comments concerning "cold fusion" in Hoffman.

For a good up to date overall analysis of the present status of Cold Fusion/Low Energy Nuclear Transmutations (CF/LENT), attention is directed to the MEMO (dated 10/9/97) from Bennett Miller to Dr. Robert W. Bass.

The Miller Memo indicates Dr. Bass had requested the Department of Energy to do a new, full-scale review of the Cold Fusion/Low Energy Nuclear Transmutations

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(CF/LENT) phenomena because of what Dr. Bass considered to be "emerging evidence of progress".

The Miller Memo indicates DOE's response was to commission Mr. Miller to do the review.

Page 3 of the Miller Memo indicates the vast amount of documents, etc., reviewed and considered by Miller in arriving at his conclusions.

Basically, the conclusion of the Miller Memo is that there is still no concrete evidence of excess heat, nuclear transmutations, etc. Note particularly the following excerpts from the Miller Memo:

"The core problem that I have with CF/LENT is the disconnect between the public pronouncements of its proponents regarding the imminent commercial availability (nay, already established commercial availability if I am to believe the press clippings) of such systems and the somewhat more private and negative developments that seem to emerge at every turn.

Most prominent, but still only three among many such examples of the former, are first, the Cincinnati Group's recent representations regarding a revolutionary approach to the nuclear waste remediation problem -- representations that you openly endorsed as revealed truth; second CETI's equally bold guarantee of a CF cell that put out aneutronic, excess heat on a reliable, predictable basis. And, third, your vouching to me, some time ago, for the imminent commercial installation operation of a CF power system in a hotel/resort complex that is currently under construction.

Moreover, the casual reader, picking up an issue of Infinite Energy, for example, would be hard pressed not to conclude that CF/LENT is a closed matter as far as demonstrating scientific feasibility is concerned. Around the world, governments and industries are successfully demonstrating the phenomena of excess heat, at the very least. If so, no further development, let alone research, is needed or desired. What possible role should or could your government's federal research and development community play when its charter is to support primarily that work that the private sector cannot or will not do on its own?

At the same time of course, more careful attention to what is going on suggests that not all is what it seems to be. The CG approach to nuclear transmutation is at best mired in controversy of the most basic sort. There is no verification of initial claims. There is no explanation of the basic process. A

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recent attempt to verify the process by a third party in one of DOE's national laboratories, was, in everyone's opinion, a failure; though it can be argued that the tests were inconclusive for a number of reasons. The CETI cell has similar problems. The hotel project with the 500 kw CF power plant, about which you were so enthusiastic, has been delayed indefinitely. And, the Japanese have terminated their three-year million dollar effort to demonstrate and commercialize cold fusion.

Perhaps this evidence that all is not well can be explained by sloppy science, or just complicated science, or financial difficulties unrelated to science, or by government mismanagement, or by pressure to move in different directions, though in the case of Japan that is hard to believe. Your assertion that the Japanese government has applied pressure internally to disband the effort flies in the face of all logic.

If any question accords energy matters a higher priority than the Japanese, I do not know of it. If cold fusion is real, demonstrable, and reproducible it would mean more to the Japanese than any other industrialized nation. It would be a harbinger of the ultimate energy security that they have been seeking for the past 70 years-a security of energy supply that was one, if not the most, important determinant of their willingness to go to war in 1941. What possible motive could be to disbanding an effort that advocates of CF/LENT expected to succeed, except that perhaps it was not?

In fact it is my current understanding that the NHE program was disbanded precisely because it could not meet its primary objective of a concrete demonstration of excess heat, even after three years of work and an expenditure of over \$30 million. There have been claims made that the efforts was poorly managed -- that emphasis was incorrectly given to building a precommercial infrastructure at the expense of doing the science that needed to be done. If so, that is truly a sad state of affairs. But if it is true, I believe it will be corrected in fairly short order if for no other reason than that the stakes are so large. Nonetheless, the effort by a major industrial nation to amount a successful, ministry-sponsored, CF program cannot be characterized as anything other than a failure at this point.

This line of inquiry bring us back to the fundamental dilemma. If CF/LENT is as real as some of the scientific results presented at respected scientific meetings (or as real as its press clippings), then it is already well beyond the stage where federal tax dollar are needed. It is a commercial reality, or so close that the private sector should be jumping at the business opportunity of a lifetime -- the opportunity to capitalize on a discovery of momentous proportions that is relatively uncluttered by government claims to prior knowledge or prior invention.

If on the other hand, CF/LENT is still in that nascent stage where nothing is really clear and where the prospect still exists that all is artifact and anecdote, then there is only one prudent course for practioners to follow -- go back to basics and systematically subject the phenomena to carefull examination by the time-tested process of merit-based, peer-review.



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I believe, as I have already stated, that I think there are good things to be done in this arena. New ground to be broken. New discoveries to be made. New industries created. But only after the basic science has been illuminated and accepted by the scientific community at large. That is how we, as a nation, have built the greatest scientific establishment in the world. I urge you and your colleagues to accept the challenge. Come forward. Present proposals. Abide by the process".

Note that Blue (like the Miller Memo above), also refers to Japan as dropping the funding for cold fusion research.

The documents relied on above by the examiner, are evidence that one of ordinary skill in this art does not know the parameters of an operative cold nuclear fusion/cold nuclear transformation system which is actually capable of producing nuclear reactions or excess heat, nor, how to determine these requisite parameters and, do not consider such cold nuclear reaction systems to be operative.

This being the case, it is necessary for applicants specification to disclose the requisite parameters for obtaining the particular disclosed and claimed nuclear reactions, nuclear transformations, and/or heat energy utilizing applicants particular cold nuclear reaction system.

However, applicants specification is insufficient and non-enabling in failing to set forth said requisite parameters.

In the present case, the examiner has stated above that there is no adequate description nor enabling disclosure of said requisite parameters.

As also indicated above, even applicants specification indicates said "requisite parameters" as being critical for obtaining an operative system (e.g. see page 12) and thus, applicants specification also supports the examiner's position.

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Note again that the examiner has presented extensive documentary evidence that those of ordinary skill in this art do not know what specific parameters, are actually necessary to cause the production of nuclear reactions or excess heat in this type of system. See Bank v. Rauland Corp. 64 USPQ 93; In re Corneil et al, 145 USPQ 697.

Note further that said extensive documentary evidence shows that the scientific community in general considers the alleged positive cold nuclear reaction results to be no more than the result of experimental errors or misinterpretation of experimental data, and not-reproducible.

Again, as set forth above, "reproducibility" must go beyond one's own lab. One must produce a set of instructions, a recipe, that would enable any one in their own independent lab, to produce the same results. If reproducible only occurs in one's on lab, errors (such as systematic errors or misinterpretation of experimental data) would be suspect.

The present case is considered analogous to that in In re Chilowsky, 134 USPQ 515, wherein the Court held the disclosure to be insufficient. In the present case, the examiner has shown that various necessary parameters have not been provided and, the examiner has provided evidence that the artisan does not know the requisite parameters of an operative cold fusion system, nor how to make an operative cold fusion system.

Note in this respect the Court's statement on page 519 of In re Chilowsky:

"Chilowsky could not start to describe his invention with the assumption that those skilled in the art knew in detail how to build his nuclear reactor. Since it was a major part of what he purported to have invented, it is incumbent on him,

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under section 112, to tell how to build it, under principles of patent law too elementary to require discussion".

Applicant has submitted documents as allegedly showing successful cold fusion experiments, involving the work of Dr. Arata, Dr. Case, Dr. Miles, and Dr. McKubre, as well as the "boil dry" experiments of F and P.

However, said submitted documents are unpersuasive of any error because the cold fusion experiments of Drs. Arata, Case, Miles and McKubre have all been discredited.

As to documents showing that the alleged positive results of Dr. Miles cannot be relied on as accurate, resort may be had for example, to Jones (Surface and Coatings Technology – 1992), Jones et al (I) (J. Phys. Chem; - 1995), Jones et al (III) (J. Phys. Chem. B, 1998), Droege (Maui Papers #4).

Even Miles himself in an article entitled "Cold Fusion Controversy" on pages 10, 11 of C & EN (July 13, 1998) states:

"The cold fusion controversy will continue until an experiment is so clearly defined that it can be readily reproduced in any laboratory. My results, along with the reports from many other laboratories, suggest that there are hidden variables within the palladium metal that are not yet under experimental control. These variables include the grain size and impurity levels."

Little (21 May 1998), found no evidence of excess heat when attempting to duplicate the alleged positive results of Dr. Case, even with input from Dr. Case.

The alleged showings of excess heat such as in "boil dry" or "heat alter death" experiments such as that of F and P, are of no merit in view of the showings for example, in any of Morrison (III) (Physics Letters A), Morrison (VI) (Cold Fusion Update

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No. 8), Morrison (VII) (Cold Fusion Update No. 9), Droege (Maui Papers #4), White, Wilson et al.

As to the alleged positive results of Dr. Arata, note for example Murray (VIII) and Shanahan (III).

As to the alleged positive results of Dr. McKubre, note for example, Shelton et al, Green et al, Shkedi et al, Giglio, Murray (II), Murray (V), Shanahan (III).

Note particularly, the following quote from McKubre in Murray (II):

"McKubre has further amplified this dismal position:  
We do not know how to reproduce our own experiments. We have generated more null results and hours of beautiful calorimetric balance (>100, 000h) than anyone on the planet except Fleischmann and Pons. Nevertheless, the existence of a thermal anomaly in the D/Pd system is clear to me, as it is to them because we have seen the effect with our own eyes and modulated it with our own hands. We cannot prove it to you because we are not in control of all critical parameters. You should be skeptical, and remain so until we supply proof." (Underlining added).

Shanahan (III) refers to problems with McKubre attempting to replicate Arata's work.

Shanahan (IV) refers to a systematic error in mass flow calorimetry that can account for the alleged excess power (heat) results in cold fusion experiments.

It is apparent from the specification (as well as applicants comments) that applicants concept or theory of obtaining an operative cold fusion system, is actually based on the "cold fusion/nuclear reaction" system that came about from the work of F and P, and it is workable or operative, only if these system are already operative.

However, as set forth above, the examiner has presented evidence showing that in such cold fusion systems, the claims of nuclear reactions or excess heat (as well as

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of other nuclear reaction products), are not reproducible or even obtainable. It consequently must follow that the claims of nuclear reactions or excess heat are not reproducible or even obtainable with applicants invention. While applicant may have set forth theoretical concepts, it is well known in the cold fusion/nuclear reaction field that theory and reality have a habit of not coinciding. There is no evidence to indicate applicant has so succeeded where others have failed, in arriving at an operative cold nuclear reaction system, i.e. that he progressed his system beyond the point of an unproven theory or concept which still requires an undue amount of experimentation to enable the artisan to make and use the invention system for its indicated purpose. This view is also considered supported by the failure to set forth a full example of the specific parameters of an operative embodiment. One cannot rely on the skill in the art for the selection of the proper quantitative values to present an operative cold fusion system, since those in the art do not know what these values would be. See Bank v. Rauland Corp., 64 U.S.P.Q 93; In re Corneil et al, 145 U.S.Q. 697.

It is thus considered that the examiner (for the reasons set forth above) has set forth a reasonable and sufficient basis for challenging the adequacy of the disclosure. The statute requires the application itself to inform, not to direct others to find out for themselves; In re Gardner et al, 166 USPQ 138, In re Scarbrough, 182 USPQ 298. Note that the disclosure must enable a person skilled in the art, to practice the invention without having to design structure, not shown to be readily available in the art; In re Hirsch, 131 USPQ 198.

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To comply with the enablement requirement of the first paragraph of 35 USC 112, a disclosure must adequately present the claimed invention so that an artisan could practice it without undue experimentation. In determining whether any given disclosure would require undue experimentation to make and use claimed subject matter, consideration must be given to such factors as the relative skill of those in the art, the state of the prior art, the nature of the invention, the presence or absence of working example, the amount of direction or guidance presented, and the quantity of experimentation necessary. In re Wands, 8 USPQ 1400, citing with approval Ex parte Forman, 230 USPQ 546, 547.

Additionally, it is noted that there has been a published Board decision involving “cold fusion”:

See Ex parte Dash, 27 USPQ2d 1481, wherein it was held that the examiner did not err in rejecting claims for “cold fusion” of nuclear energy for lack of enablement under 35 U.S.C. 112 and as inoperative and lacking utility under 35 U.S.C. 101, since evidence demonstrating that neither excess heat nor traditional nuclear by products of fusion reaction have been detected by careful researchers conducting experiments under conditions that are highly analogous to applicant’s electrolytic cell, and demonstrating relative ease with which erroneous results can be achieved by failing to observe strict experiment design controls shifted burden of proof to applicants, and applicants failed to produce any evidence to overcome examiner’s position.

There are also been a decision by the U.S. Court of Appeals Federal Circuit on an application involving “cold fusion”.

See In re Swartz, 56 USPQ2d 1703 wherein it was held:

Claims in application that fail to meet utility requirement because invention is inoperative will also fail to meet enablement requirement because person skilled in art cannot practice invention, since application, in order to satisfy enablement of 35 U.S.C § 112, must adequately disclose claimed invention so as to enable person skilled in art to practice invention at time of filing without undue

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experimentation, and since utility requirement of § 101 mandates that invention be operable to achieve useful results.

U.S. Patent and Trademark Office properly rejected application claims directed to "cold fusion" process for lack of utility and enablement, since PTO provided substantial evidence that those skilled in art would reasonably doubt asserted utility of claimed invention, and found that applicant had not submitted evidence that concept of invention could have been practiced by person of ordinary skill without undue experimentation, and since applicant's conclusory allegations that PTO's decision on utility issue is not supported by substantial evidence, or that its conclusion of lack of enablement is incorrect as matter of law.

It is also noted that there has apparently been a court decision on cold fusion in Italy (e.g. see Italy-Cold Fusion & Judge's Verdict).

4. Claims 5, 19, 28 are rejected under 35 U.S.C. § 112, first paragraph for the reasons set forth in the objection to the specification, in section 3 above.

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 5, 19, 28 are rejected under 35 U.S.C. 101 because the invention as disclosed is inoperative and therefore lacks utility.

The reasons that the invention as disclosed is operative are the same as the reasons set forth section 3 above as to why the specification is objected to and reasons set forth in said section 3 above are accordingly incorporated herein.

There is no reputable evidence of record to indicate the invention has been reduced to the point of providing in current available form, an operative cold fusion system. The invention is not considered as meeting the requirements of 35 U.S.C. 101 as being "useful". Note in this respect, page 89 of Huizenga (I). Said page 89 reproduces the conclusion of the final report of the DOE/ERAB panel on cold fusion.

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Conclusion (I) states that there is no "convincing evidence that useful sources of energy will result from the phenomena attributed to cold fusion".

Applicant at best, has set forth what may be considered a concept or an object of scientific research. However, it has been held that such does not present a utility within the meaning of 35 U.S.C. 101. See Brenner v. Manson, 148 U.S.P.Q. 689.

Additionally, it is well established that where as here, the utility of the claimed invention is based upon allegations that border on the incredible or allegations that would not be readily accepted by a substantial portion of the scientific community, sufficient substantiating evidence of operability must be submitted by applicant. Note In re Houghton, 167 USPQ 687 (CCPA 1970); In re Ferens, 163 USPQ 609 (CCPA 1969); Puharich v. Brenner, 162 USPQ 136 (CADA 1969); In re Pottier, 152 USPQ 407 (CCPA 1967); In re Ruskin, 148 USPQ 221 (CCPA 1996); In re Citron, 139 USPQ 516 (CCPA 1963); and In re Novak, 134 USPQ 335 (CCPA 1962).

7. Claims 5, 19, 28 are rejected under 35 U.S.C. 112, first paragraph, because the specification (as well as applicants comments or Remarks) indicate that critical features are necessary for producing an operative solid state deuterium fusion reaction (none of which critical features are found in any of claims 5, 19, 28).

Thus, the specification does not reasonably provide enablement for the solid state deuterium fusion system as broadly set forth in any of applicants claims 5, 19, 28.

The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.



8. Claims 5, 19, 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are vague, indefinite and incomplete.

As indicated in section 3 above, the examiner has cited several documents, e.g. Schirber et al, Carstens et al, Klatt et al (I), Baranowski, Tanaka et al, and McMullen et al, which disclose systems which are considered identical to that which is disclosed and claimed by applicant and said systems are operated on in the same manner as applicants invention and that accordingly said systems in said "several documents" must inherently function in the same manner to produce the same results as that of applicant.

Assuming for the sake of argument that applicants invention does actually function in a different manner to produce a different result from that of any of said "several documents" it can only be because applicants invention actually contains some additional, critical feature(s), component(s), etc., not found in any of said "several documents" which is necessary to enable applicants invention to function differently from any of said "several document" so as to be able to produce a different result.

Accordingly, applicant's claims are incomplete (as well as vague and indefinite) in failing to recite said additional critical feature(s), component(s), etc.

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 5, 19, 28 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by any of Arata et al, Scaramuzzi et al or Hasegawa et al.

The references each illustrate the actual claimed structure, including a vessel containing a host metal (e.g. Pd), a means for providing a vacuum in the vessel (in Arata et al, note Fig. 9 and pages 11, 16 of the English language translation); in Scaramuzzi et al, note claim 1 (col. 6); in Hasegawa et al, note Examples 1 and 4), a means for controlling deuterium gas pressure and reactor vessel temperature (the

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source of deuterium gas which is connectable to the vessel and the means for removing heat from the Pd) and, a means for removing the generated heat to a useful load (the means for removing heat from the Pd (e.g. see page 10 of the English language translation of Arata et al; e.g. col. 1 lines 1+ and col. 4 lines 41-45 of Scaramuzzi et al and; e.g. pages 1, 8, 9, 14 of Hasegawa et al).

12. Claims 19 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka et al.

The reference shows the actual claimed apparatus (see Fig. 2). Pressure (reactor) vessel 23 contains the host metal and a void space. Vessel 23 can be connected to vacuum means by valve 25. The pump system, the gas sources, the heating means and the cooling means all provide a means for controlling the reactor vessel's temperature and the gas pressure inside the vessel. The claimed means for transferring heat reads on the cooling tubes 50 which transfer heat to the refrigeration 35 (the claimed useful load).

Note particularly that applicant's claims are to an apparatus.

While the reference shows the use of deuterium (e.g. see col. 4 line 47), it is pointed out that the claim would still be anticipated by the reference even if it did not recite the use of deuterium, since, as set forth in MPEP 2115, a recitation in a claim to the material or article worked upon, does not serve to limit an apparatus claim.

Note that the reference discloses the same structure or system as is recited in the claims and it is acted on in the same manner. Accordingly, this system of the

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reference must also inherently function in the same manner to produce the same results as that of applicant.

As to limitations which are considered to be inherent in a reference, note the case law of In re Ludtke, 169 USPQ 563, In re Swinehart, 169 USPQ 226, In re Fitzgerald, 205 USPQ 594, In re Best et al, 195 USPQ 430, and In re Brown, 173 USPQ 685, 688.

It is noted that the claims contain statements as to how and in what manner, it is desired to operate the system.

It is well settled case law that such limitations, which are essentially method limitations or statements of intended or desired use, do not serve to patentably distinguish the claimed structure over that of the reference. See In re Pearson, 181 USPQ 641; In re Yanush, 177 USPQ 705; In re Finsterwalder, 168 USPQ 530; In re Casey, 152 USPQ 235; In re Otto, 136 USPQ 458; Ex parte Masham, 2 USPQ 2<sup>nd</sup> 1647.

See MPEP 2114 which states:

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647.

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than functions. In re Danly, 120 USPQ 528, 531.

Apparatus claims cover what a device is, not what a device does. Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528.

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al in view of Klatt et al (I) (4600660).

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Claim 5 recites the host metal can include palladium.

Klatt et al (I) states that it is advantageous to coat a titanium containing hydrogen absorbing material with palladium because it keeps the titanium alloy free of oxides, it has good corrosion resistance and it is itself a good absorber of hydrogen (e.g. see col. 2 lines 12-67).

Accordingly, it would have been prima facie obvious to have coated the titanium containing alloy in Tanaka et al, with palladium so as to obtain the advantages thereof as taught by Klatt et al (I).

14. The other references cited further illustrate pertinent art.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harvey Behrend whose telephone number is (703) 305-1831. The examiner can normally be reached on Tuesday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Carone, can be reached on (703) 306-4198. The fax phone number for the organization where this application or proceeding is assigned is (703) 306-4195.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.



Behrend/vs  
March 31, 2004

HARVEY E. BEHREND  
PRIMARY EXAMINER